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**Rocky Mountain Section - 72nd Annual Meeting - 2020**

Paper No. 7-1

Presentation Time: 8:30 AM-4:30 PM

**USING CEMENTUM HISTOLOGY TO ESTIMATE AGE IN *CORYPHODON***

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Acellular extrinsic cementum is a continuously growing tissue that anchors the tooth root to the alveolar bone and has the potential to record life history traits such as age of an individual. Cementochronology offers an alternative to bone histology in determining the age of fossil individuals. In contrast to bone, cementum growth layers do not remodel or get resorbed. In this study, we aim to use cementochronology to age the fossil pantodont *Coryphodon*. The Paleocene to Eocene *Coryphodon* is one of the first placental mammals to reach large body size (over 500 kg) after the K-Pg extinction event and is hypothesized to have undergone dwarfing in the Eocene as a response to increased temperature and a drier, more seasonal climate. Whether *Coryphodon* extended its life span to achieve larger body sizes and if the rapid climatic shifts impacted growth rate and longevity are unknown. Here we sampled thirteen *Coryphodon* specimens from several Wasatchian and Clarkforkian biozones in the Bighorn Basin of Wyoming. The roots were sampled near the apical one third and standard petrographical techniques were used to create ground thin sections. High-resolution montages of thin sections were traced in Adobe Illustrator. Three of the thirteen samples were deemed sufficiently preserved based on preservation of cross-cutting Sharpey's fibers and lacunae from cementocytes. In those specimens, growth layer groups could be identified at the cemento-enamel junction. Specimens studied had just a few to almost 30 growth layer groups. This is the first study to demonstrate that *Coryphodon* reached several decades in age. Our data demonstrate that cementochronology holds great potential to be a useful method for studying body size evolution in the fossil record.

Session No. 7--Booth# 37

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Monday, 4 May 2020: 8:30 AM-4:30 PM

Ballroom A (Utah Valley Convention Center)

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